FEDERAL SUPPLY CLASS
6145

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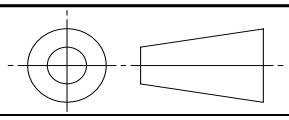
ISSUED 2000-06 REVISED PROPOSED DRAFT 2003-04

THIRD ANGLE PROJECTION



CUSTODIAN: SAE AE-8/AE-8D

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

WIRE, ELECTRICAL, POLYTETRAFLUOROETHYLENE/ POLYIMIDE INSULATED, NORMAL WEIGHT, TIN COATED, COPPER CONDUCTOR, 150°C, 600-VOLT

AS22759/85
SHEET 1 OF 6

REV. A

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THE REQUIREMENTS FOR ACQUIRING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) SPECIFIED IN THE SOLICITATION: MIL-W-22759.

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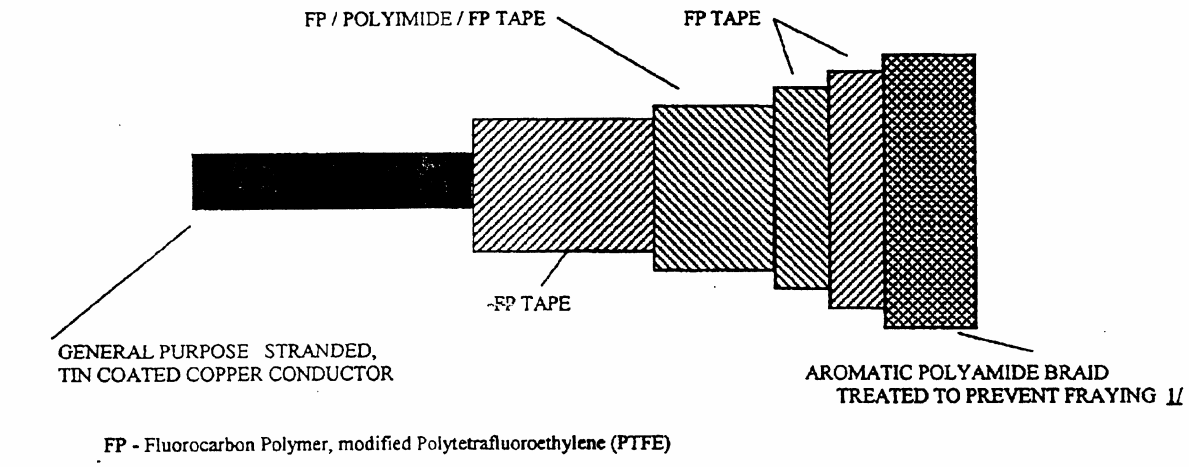

FP - Fluorocarbon Polymer, modified Polytetrafluoroethylene (PTFE)

1/ Braid: Bright aromatic polyamide yarn, 200 Denier, 100 filaments, tightly formed, uniform in appearance, treated with a clear finisher coating. The finisher coating shall be compatible with the temperature rating and performance requirements of the insulated wire.

FIGURE 1. GENERAL CONFIGURATION.

TABLE I. CONSTRUCTION DETAILS.

Part No. 1/	Wire Size	Conductor			Finished Wire			
		Stranding (number of strands x AWG gauge of strands)	Diameter (in.)		Resistance at 20° C (68°F) (ohms/ 1000 ft max.)	Diameter (in.)		Weight (lb./1000 Ft) (Max.)
			MIN.	MAX.		Min.	Max.	
M22759/85-2 -*	2	665 x 30	0.320	0.340	0.183	0.360	0.380	227.0
M22759/85-1-*	1	817 x 30	0.366	0.380	0.149	0.400	0.420	295.0
M22759/85-01-*	0	1045 x 30	0.395	0.425	0.116	0.442	0.462	351.0
M22759/85-02-*	00	1330 x 30	0.440	0.475	0.091	0.498	0.528	432.0
M22759/85-03-*	000	1665 x 30	0.500	0.540	0.071	0.554	0.584	542.0
M22759/85-04-*	0000	2109 x 30	0.565	0.605	0.056	0.615	0.655	689.0

1/ **Part Number:** The preferred color is dark green with the color designator 5D. Example: Size 2 dark green - M22759/85-2-5D. White is an acceptable alternate with a color designator of 9.

TABLE II. WIRE INSULATION MATERIALS. 1/

Tape code	Thickness Nominal	Material
1	0.0020	0.0005 (FPFP)/0.0010 (Polyimide)/0.0005 (FPFP)
2	0.0020	FP (Skived)
3	0.0030	FP (Unsintered)

1/ Physical properties of FP tapes (skived and unsintered) shall be in accordance with MIL-W-22759 requirements.

TABLE III. PHYSICAL PROPERTIES OF FP/POLYIMIDE/FP TAPES.

Tensile Strength	19,000 lb/in sq. (average minimum)
Tensile Modulus	350,000 lb/in sq. (average minimum)
Elongation	40 percent (average minimum)
Dielectric Strength	4,000 volts/mil (average minimum)
0.0005 FP Layer (bottom)	Distinguishable color (next to conductor) May be used at manufacturer's option

TABLE IV. TAPE OVERLAP REQUIREMENTS. 1/

Wire Size	Wrap 1			Wrap 2			Wrap 3			Wrap 4			Nominal Wall Thickness (mils)2/
	Tape Code	Percent Overlap		Tape Code	Percent Overlap		Tape Code	Percent Overlap		Tape Code	Percent Overlap		
		Min	Max		Min	Max		Min	Max		Min	Max	
2	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2
1	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2
1/0	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2
2/0	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2
3/0	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2
4/0	2	20.5	35.0	1	50.5	55.0	3	50.5	54.0	3	50.5	54.0	16.2

1/ Wrap 1 is innermost tape which is in contact with the conductor. Wraps 2, 3 and 4 are progressively further away from the conductor core.
2/ Nominal wall thickness does not include the polyamide braid thickness.

TABLE V. FLUID TABLE.

Test Fluid	Test temperature (°C (°F))	Immersion time (hrs.)
A. MIL-A-8243 Anti - icing and Deicing Defrosting Fluid, undiluted	48 - 50 (118 - 122)	20
B. MIL-A-8243 Anti - icing and Deicing Defrosting Fluid, diluted 60/40 (fluid/water) ratio	48 - 50 (118 - 122)	20
C. MIL-C-43616, Cleaning Compound, Aircraft Surface, Type I	48 - 50 (118 - 122)	20
D. ASTM D1153, Methyl Isobutyl Ketone (For use in Organic Coatings)	20 - 25 (68 - 77)	168
E. SAE AS 1241, Fire Resistant Hydraulic Fluid for Aircraft	48 - 50 (118 - 122)	20
F. MIL-L-7808, Lubricating Oil, Aircraft Turbine Engine, Synthetic Base	118 - 121 (244 - 250)	30
G. MIL-C-87937, Cleaning Compound, Aerospace Equipment, Type II or Type IV, undiluted	63 - 68 (145 - 154)	20
H. MIL-C-87937, Cleaning Compound, Aerospace Equipment, Type II or Type IV, diluted 25/75 (fluid/water) ratio	63 - 68 (145 - 154)	20
I. TT-S-735, Standard Test Fluids: Hydrocarbon, Type I	20 - 25 (68 - 77)	168
J. TT-S-735, Standard Test Fluids: Hydrocarbon, Type II	20 - 25 (68 - 77)	168
K. TT-S-735, Standard Test Fluids: Hydrocarbon, Type IV	20 - 25 (68 - 77)	168
M. Dielectric - coolant Fluid Synthetic Silicate Ester Base, Monsanto Coolanol 25 or approved equivalent.	20 - 25 (68 - 77)	168
N. MIL-G-3056, Gasoline, Automotive, Combat	20 - 25 (68 - 77)	168

RATINGS:

TEMPERATURE RATING: 150°C (302°F) MAXIMUM CONTINUOUS CONDUCTOR TEMPERATURE.
VOLTAGE RATING: 600 VOLTS (RMS.) AT SEA LEVEL

ADDITIONAL REQUIREMENTS:

WET ARC PROPAGATION RESISTANCE (TEST REQUIRED FOR INITIAL QUALIFICATION ONLY): QUALIFICATION BY SIMILARITY TO MIL-W-22759/88-20.

DRY ARC PROPAGATION RESISTANCE (TEST REQUIRED FOR INITIAL QUALIFICATION ONLY): QUALIFICATION BY SIMILARITY TO MIL-W-22759/88-20.

BLOCKING: 200°C ± 2°C (392°F ± 3.6°F)

COLOR: FOR BRAIDED CONSTRUCTIONS, PREFERRED COLOR SHALL BE DARK GREEN WITH THE MUNSELL COLOR LIMITS OF 5Y 3/2 AND 5B 2/0.5. WHITE IS AN ACCEPTABLE ALTERNATIVE. CONFORMITY OF COLOR TO THE LIMITS OF MIL-STD-104 SHALL NOT BE REQUIRED AFTER OVEN EXPOSURE.

COLOR STRIPING OR BANDING DURABILITY: NOT REQUIRED

CONDUCTOR STRAND ADHESION: REQUIRED

CONTINUOUS LENGTHS: SCHEDULE B

FLAMMABILITY: TEST IN ACCORDANCE WITH MIL-STD-2223 METHOD 1006 PROCEDURE A.
REQUIREMENTS:

DURATION OF AFTER-FLAME	3 SECONDS (MAX)
FLAME TRAVEL	3 INCHES (MAX)
NO FLAMING OF TISSUE	

HIGH FREQUENCY SPARK TEST: (WHEN USED IN LIEU OF IMPULSE DIELECTRIC TEST) TEST IN ACCORDANCE WITH MIL-STD-2223 METHOD 3008, 5.7 KILOVOLTS (RMS.) TEST 100 PERCENT OF THE WIRE.

HUMIDITY RESISTANCE: AFTER HUMIDITY EXPOSURE WIRE SHALL MEET THE REQUIREMENTS FOR INITIAL INSULATION RESISTANCE.

IDENTIFICATION OF PRODUCT: COLOR CODE DESIGNATOR NOT REQUIRED.

IDENTIFICATION DURABILITY: NOT REQUIRED

IMMERSION (TEST REQUIRED FOR INITIAL QUALIFICATION ONLY): TEST IN ACCORDANCE WITH MIL-STD-2223 METHOD 1001 INCLUDING THE ADDITIONAL FLUIDS LISTED IN TABLE V OF THIS SPECIFICATION. USE MANDRELS AND WEIGHTS LISTED IN TABLE VI FOR BEND TESTING. DIELECTRIC TEST, 2500 VOLTS (RMS), 60 HZ. FOR TURBINE FUEL IMMERSION TEST OF MIL-STD-2223, EITHER JP4 OR MIL-T-83133 TYPE JP-8 (NATO TYPE F-34) MAY BE USED.

IMPULSE DIELECTRIC TEST: 8.0 KILOVOLTS (PEAK). TEST 100 PERCENT OF THE WIRE

INSULATION RESISTANCE: 5000 MEGOHMS FOR 1000 FEET (MIN.)

LIFE CYCLE: 500 HOURS AT 230°C ± 2°C (446°F ± 3.6°F). DIELECTRIC TEST, 2500 VOLTS (RMS), 60 HZ. USE MANDRELS COATED WITH POLYTETRAFLUOROETHYLENE SUCH THAT THE DIAMETER OF THE MANDRELS, AFTER COATING, STILL CONFORM TO THE REQUIRED TEST MANDRELS DIAMETERS OF TABLE VI. AFTER OVEN EXPOSURE, LAYERS SHALL NOT SEPARATE AND OR TAPES SHALL NOT LIFT ALONG THE INSULATION OR AT THE ENDS. (DARKENING OF THE TIN COATING OF THE CONDUCTORS DUE TO THE NORMAL AIR OXIDATION SHALL NOT BE CAUSE FOR REJECTION OF THIS TEST)

LOW TEMPERATURE (COLD BEND): USE MANDRELS AND WEIGHTS SPECIFIED IN TABLE VI. CHAMBER TEMPERATURE, -65°C ± 2°C (-85°F ± 3.6°F). DIELECTRIC TEST, 2500 VOLTS (RMS), 60 HZ.

SHRINKAGE: 0.125 INCH (MAX.) AT 230°C ± 2°C (446°F ± 3.6°F).

SMOKE: 200°C ± 5°C (392°F ± 9°F); NO VISIBLE SMOKE.

SOLDERABILITY: NOT REQUIRED. THIS SLASH SHEET IS PRIMARILY INTENDED FOR CRIMP TERMINATIONS. FOR SOLDERABILITY APPLICATIONS USE THE SILVER COATED COPPER VERSION OF THIS SPECIFICATION.

STRIPPABILITY: NOT REQUIRED.

TAPE OVERLAP: IN ACCORDANCE WITH MIL-STD-2223, METHOD 6005.

TENSILE MODULUS: TEST COMPOSITE FILM IN ACCORDANCE WITH ASTM D 882, METHOD A

THERMAL INDEX: (TEST REQUIRED FOR INITIAL QUALIFICATION ONLY). QUALIFICATION BY SIMILARITY TO MIL-W-22759/88.

THERMAL SHOCK RESISTANCE: OVEN TEMPERATURE, 200°C ± 2°C (392°F ± 3.6°F), MAXIMUM CHANGE IN MEASUREMENT, 0.125 INCHES. NO CRACKING.

WRAP (MANDREL WRAP): NO CRACKING, NO DIELECTRIC BREAKDOWN. USE MANDRELS SPECIFIED IN TABLE VI. DIELECTRIC TEST, 2500 VOLTS (RMS), 60 HZ.

TABLE VI. TEST MANDREL AND TEST LOAD REQUIREMENTS.

Wire Size (AWG)	Test Mandrel Diameter 1/ (inches)			Test Load 1/ (lbs)	
	Cold Bend	Life Cycle/ Bend Test	Wrap	Cold Bend	Life Cycle/ Bend Test
2	8.00	6.00	2.00	15.00	6.00
1	10.00	8.00	2.50	15.00	6.00
0	10.00	8.00	3.00	15.00	6.00
00	12.00	10.00	4.00	20.00	8.00
000	18.00	10.00	5.00	30.00	10.00
0000	18.00	10.00	6.00	30.00	10.00

1/ Tolerance shall be ± 3 percent of the given values.

QUALIFICATION OF WIRE:

FOR QUALIFICATION, A SOURCE IS REQUIRED TO SUBMIT DATA ON QUALITY CONFORMANCE TESTS AND ANY FINISHED WIRE TESTS AS REQUIRED BY THE QUALIFICATION AUTHORIZATION LETTER. ALL OTHER TESTING WILL BE PERFORMED BY THE QUALIFYING ACTIVITY AT THE SOURCE'S EXPENSE.

DUE TO THE EXTENDED TIME PERIOD OVER WHICH THE THERMAL INDEX TEST IS PERFORMED, A SOURCE MAY BECOME QUALIFIED UNDER THIS SPECIFICATION SHEET WHILE THIS TEST IS STILL IN PROGRESS.